August 26 & 28, 2025

Commercial Space Transportation

Public Meeting for the Environmental Impact Statement for the SpaceX Starship-Super Heavy Launch Vehicle at Launch Complex 39A at the Kennedy Space Center, Merritt Island, Florida

Federal Aviation Administration

Meeting Agenda

- Logistics
- Introductions
- Presentation
- Open House
  - Attendees may provide public comments to a court reporter or use written comment forms

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Media Contact

- For any media inquiries, please contact:
  - FAA Press Office
    - Pressoffice@faa.gov

In-Person and Virtual Public Meetings

- In-Person Meetings
  - **August 26, 2025; two meetings: 1:00 PM – 3:00 PM & 6:00 PM – 8:00 PM ET**
    - Astronaut Memorial Foundation, Center for Space Education, State Road 405, Kennedy Space Center, FL 32899
  - **August 28, 2025; two meetings: 1:00 PM – 3:00 PM & 6:00 PM – 8:00 PM ET**
    - Radisson Conference Center, 8701 Astronaut Blvd, Cape Canaveral, FL 32920
- Virtual Meeting
  - **September 3, 2025; 6:00 PM – 8:00 PM ET**
  - Register at:
    - https://us02web.zoom.us/webinar/register/WN_2aotlSQERXCHC5yJjOvm5A

How to Submit Comments

- Provide a verbal comment to the court reporter at today's meeting
- Provide a written comment at today's meeting
- Submit online at www.regulations.gov
  - Search for Docket No. FAA-2024-1395
  - Click on the "Comment" button, enter your information and comment, then click "Submit Comment"
- Mail to:

  Ms. Eva Long, FAA Environmental Protection Specialist
  c/o Leidos
  2877 Guardian Lane
  Virginia Beach, VA 23452

The comment period closes on September 22, 2025

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask the FAA in your comment to withhold from public review your personal identifying information, the FAA cannot guarantee that it will be able to do so.

FAA Presentation

Why Are We Here?

- The FAA is evaluating SpaceX's proposed operation of the Starship-Super Heavy Launch Vehicle at Launch Complex 39A (LC-39A) at Kennedy Space Center (KSC) in Merritt Island, Florida which includes:
  - Up to 44 Starship-Super Heavy launches per year
  - Up to 44 Super Heavy landings per year, to include landings at LC-39A, landing on a droneship in the Atlantic Ocean, or expending in the Atlantic Ocean
  - Up to 44 Starship landings per year, to include landings at LC-39A, landing on a droneship in the Atlantic Ocean, or soft-water or hard-water landing with expending or recovery in the Atlantic Ocean, Pacific Ocean, or Indian Ocean
  - Construction of a launch, landing, and other associated infrastructure at and in proximity to LC-39A.
- The FAA would need to authorize additional temporary airspace closures to accommodate launch and reentry operations at LC-39A
- The FAA has analyzed potential environmental impacts in a Draft Environmental Impact Statement (Draft EIS)

National Environmental Policy Act (NEPA)

- The FAA considers the issuance of a new or modified license to be a major federal action under NEPA
- NEPA is a procedural statute that requires Federal agencies to consider the potential environmental impacts of proposed actions subject to Federal control or responsibility before a decision is made
- FAA decisions to license commercial space operations and to close airspace are proposed actions subject to NEPA
- Before making a decision regarding a license, the FAA must consider:
  - A range of reasonable alternatives
  - Potential environmental impacts
  - Tribal, government agency, and public input

Project History

- LC-39A at KSC was previously sited for Starship-Super Heavy activities through National Aeronautics and Space Administration (NASA)'s *Final Environmental Assessment* (EA) *for the SpaceX Starship and Super Heavy Launch Vehicle at KSC* and resultant Finding of No Significant Impact (FONSI)

- The 2019 NASA EA was not adopted by the FAA because SpaceX did not apply to the FAA for a commercial launch Vehicle Operator license at that time and FAA had no federal action to consider

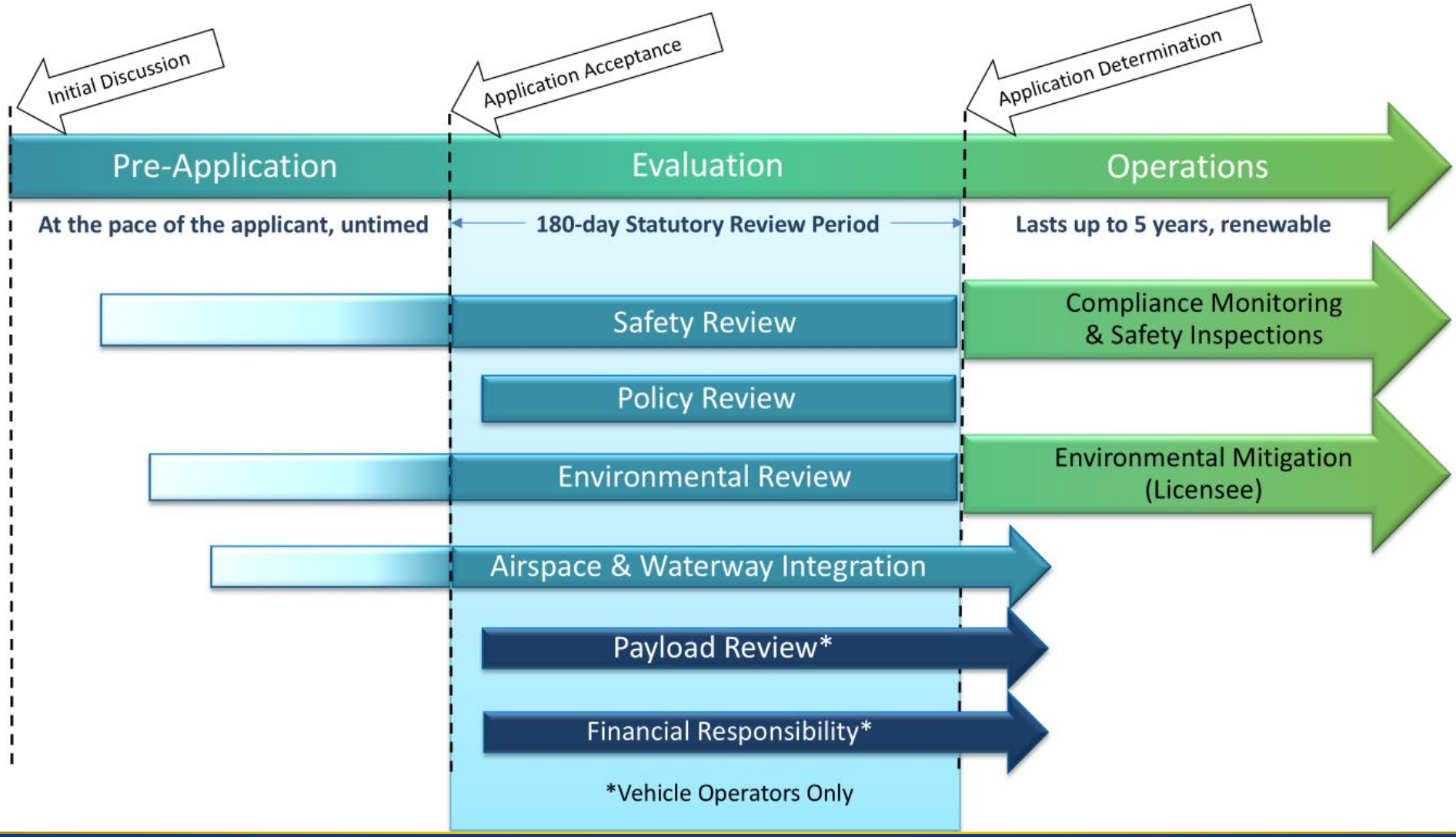
- In accordance with the 2019 NASA EA, SpaceX has undertaken infrastructure improvements at LC-39A. The Starship-Super Heavy concept of operations has been updated and is evaluated in the EIS

Purpose and Need

- **Purpose**
  - Provide greater mission capability to NASA and other SpaceX customers
  - Continue to fulfill the United States' expectation that increased capabilities and reduced space transportation costs will enhance exploration and support US leadership in space

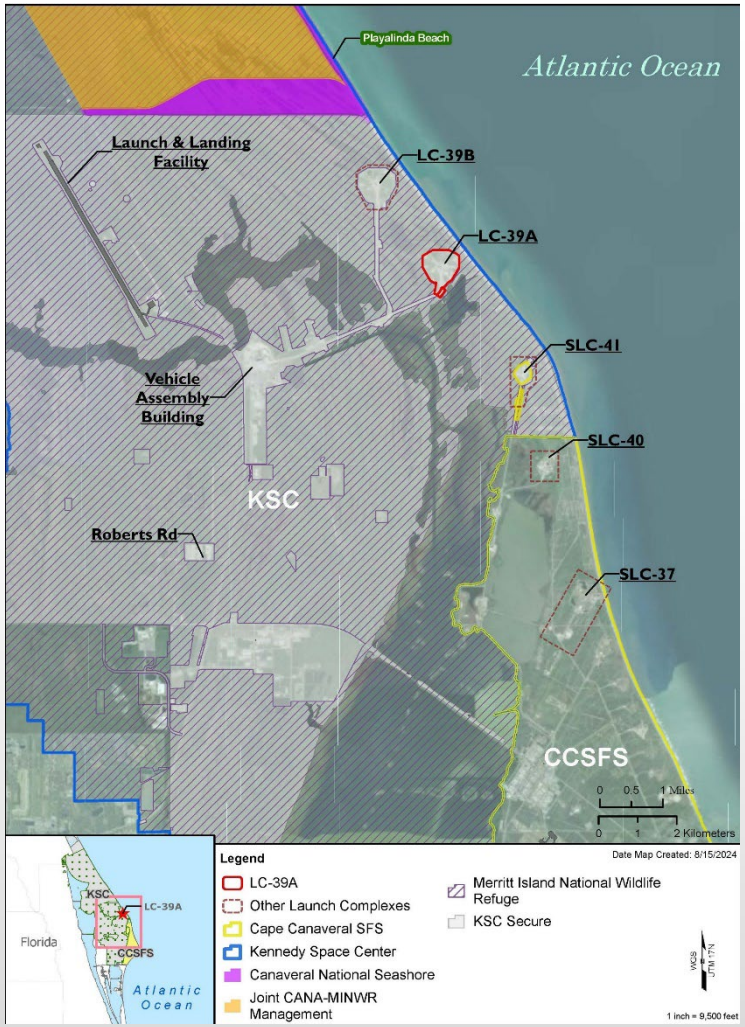
- **Need**
  - To increase operational efficiency, capabilities, and cost effectiveness of the Starship-Super Heavy program

Licensing Process: Vehicle/Site



*The Environmental Review process is in reference to the National Environmental Policy Act (NEPA) process.

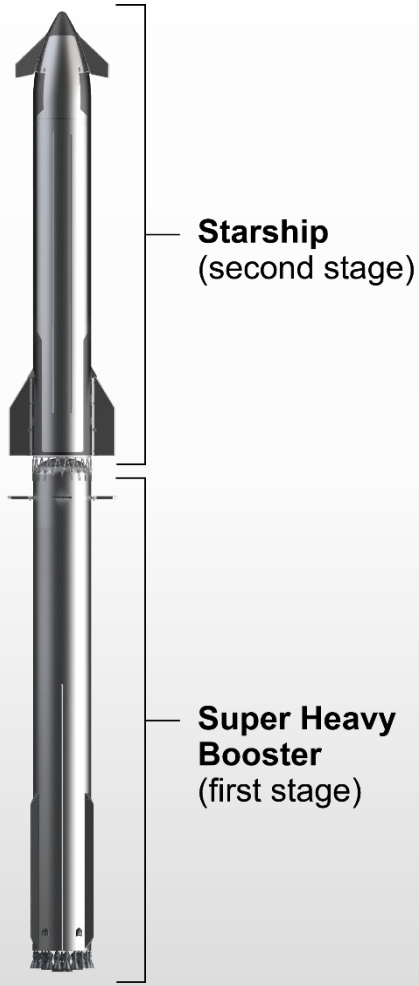
Project Location and Site Overview



Starship-Super Heavy Launch Vehicle

- Starship is equipped with 9 Raptor engines
- Super Heavy is equipped with up to 35 Raptor engines
- Raptor engines are powered by liquid oxygen (LOX) and liquid methane
- Intended to be fully reusable for multiple missions

Specification	Starship	Super Heavy
Length (meters; m)	70	80
Diameter (m)	9	9
Number of Engines	9	35
Thrust (meganewtons; MN)	28.7 MN	103 MN
Propellant quantity (metric ton; MT)	2,650	4,100



Proposed Operations

Activity	2025 Draft EIS Proposed Action
Starship Static Fire Engine Test	44 tests per year (daytime)
Super Heavy Static Fire Engine Test	44 tests per year (daytime)
Daytime refers to 7:00 a.m. to 10:00 p.m.; nighttime refers to 10:00 p.m. to 7:00 a.m.	

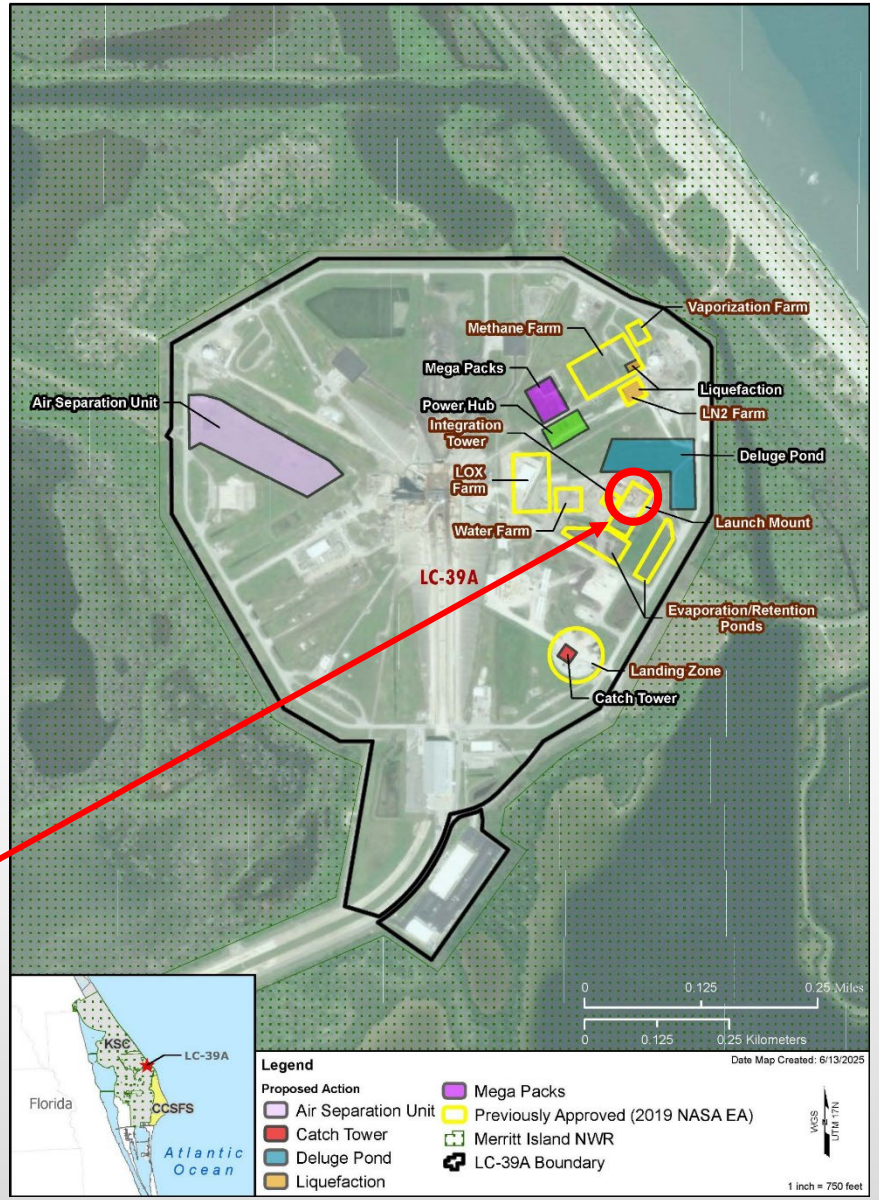
Proposed Operations

Activity	2025 Draft EIS Proposed Action
Starship-Super Heavy Launch	• 44 launches per year (22 daytime/22 nighttime)
Super Heavy Landing	• 44 landings per year (22 daytime/22 nighttime) • Landing at LC-39A, landing on a droneship in the Atlantic Ocean, or expended in the Atlantic Ocean
Starship Landing	• 44 landings per year (22 daytime/22 nighttime) • Landing at LC-39A, landing on a droneship in the Atlantic Ocean, or soft-water / hard-water landing in the Atlantic, Pacific, or Indian Ocean
Daytime refers to 7:00 a.m. to 10:00 p.m.; nighttime refers to 10:00 p.m. to 7:00 a.m.	

Proposed Launch Operations

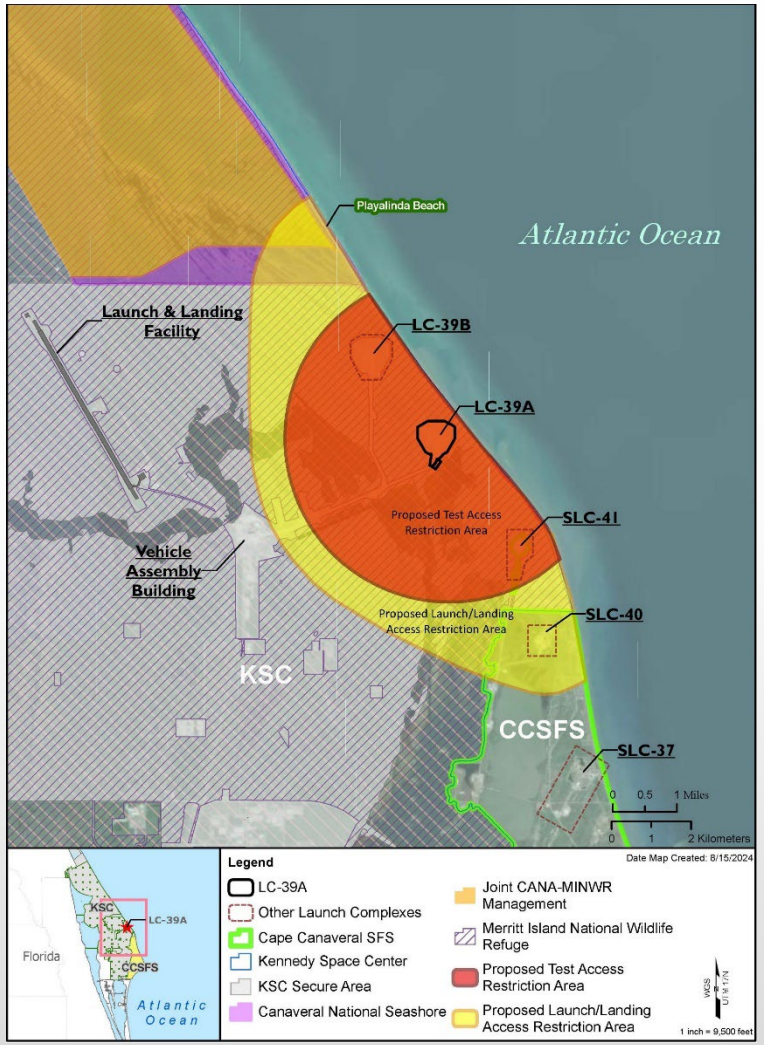
- 44 launches per year
- All launches considered in this Draft EIS would originate from Launch Complex-39A

Approximate launch pad location



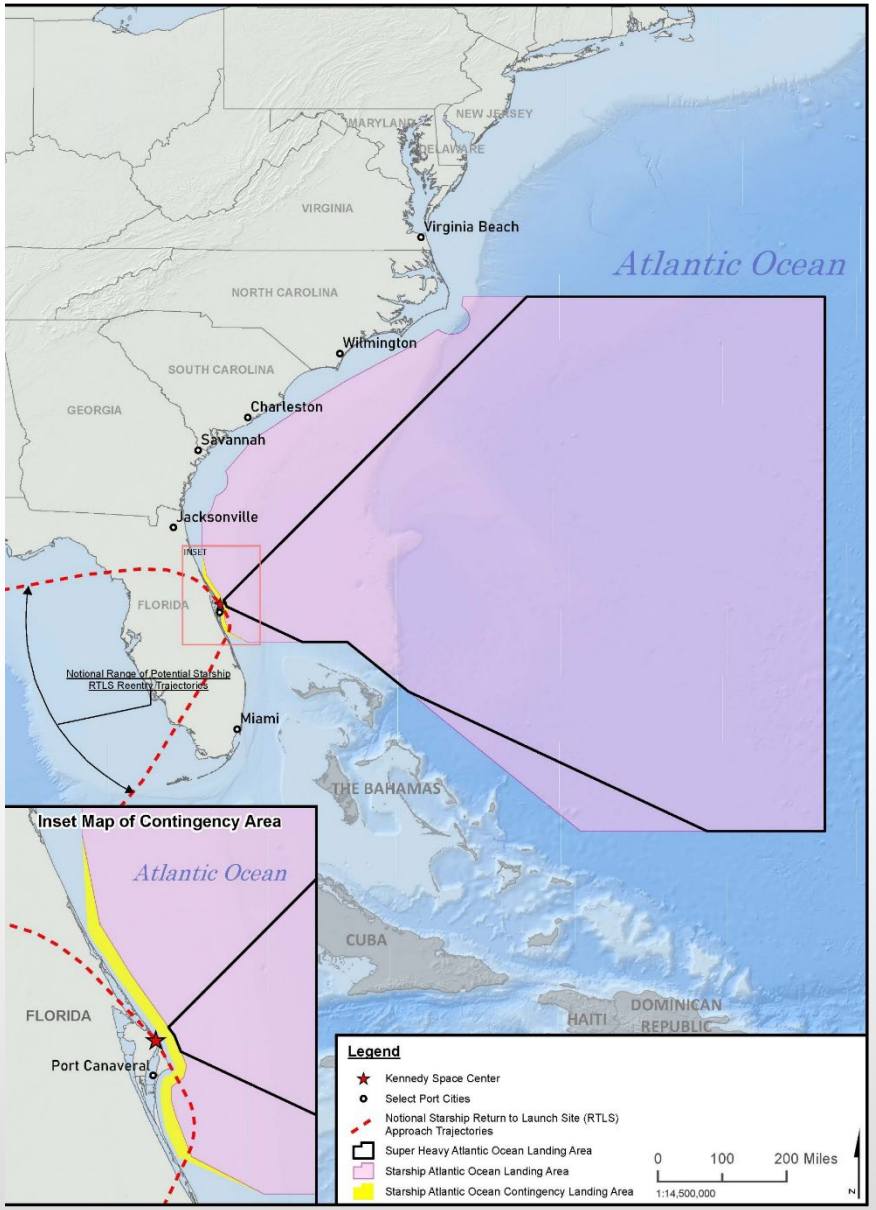
Proposed Operations – Security Areas

- Closure-related procedures would be implemented to establish a safe and secure environment for pre-launch activities, launches, and landings
  - Traffic checkpoints
  - Access control checkpoints
  - Waterborne law enforcement sweeps
  - Security sweeps of beach, roads, rivers, and creeks
  - Airspace closures



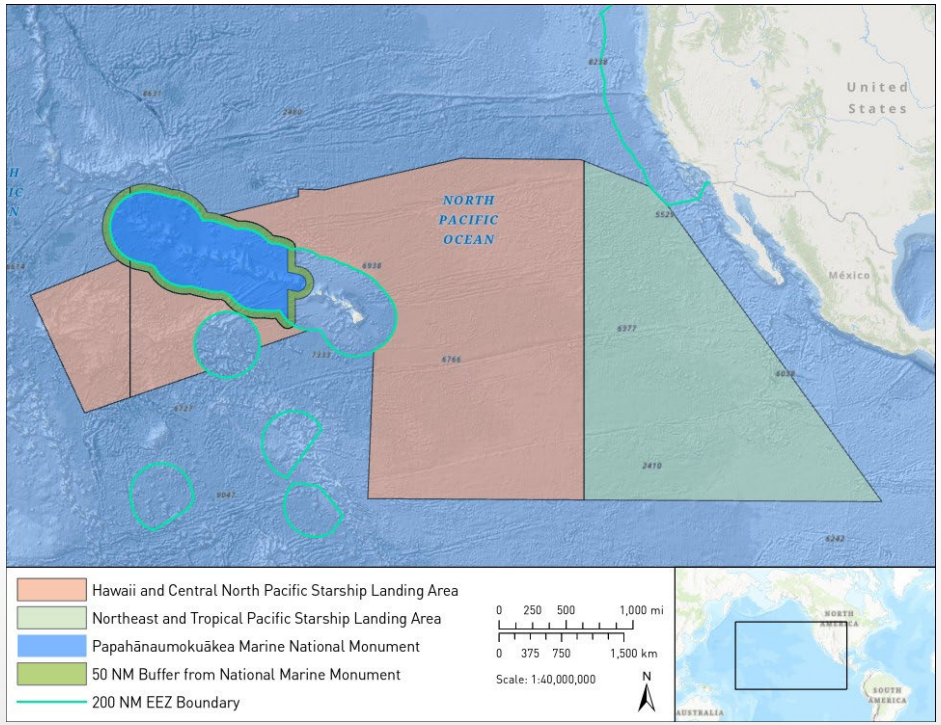
Proposed Landing Operations

- 44 Super Heavy landings per year
- 44 Starship landings per year
- Super Heavy would land at LC-39A, on a droneship in the Atlantic Ocean, or expend in the Atlantic Ocean
- Starship would land at LC-39A, on a droneship in the Atlantic Ocean, or soft-water or hard-water landing with expending or recovery in the Atlantic Ocean, Pacific Ocean, or Indian Ocean

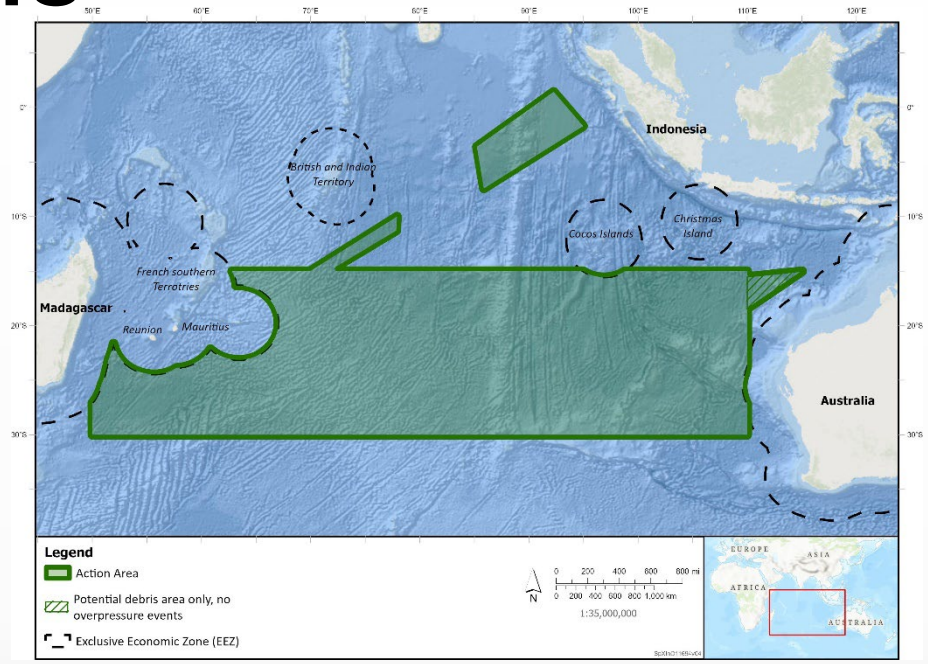


Proposed Starship and Super Heavy Atlantic Ocean Landing Areas and Notional Range of Starship RTLS Headings

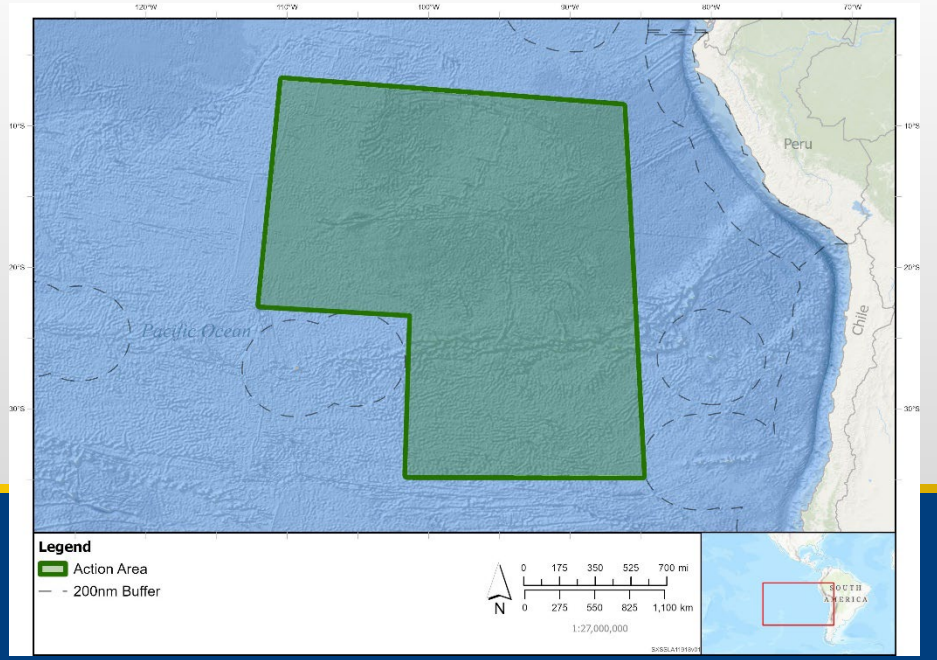
Proposed Landing Operations



Proposed North Pacific Starship Landing Area



Proposed Indian Ocean Starship Landing Area



Proposed Southeast Pacific Starship Landing Area

Lead and Cooperating Agencies

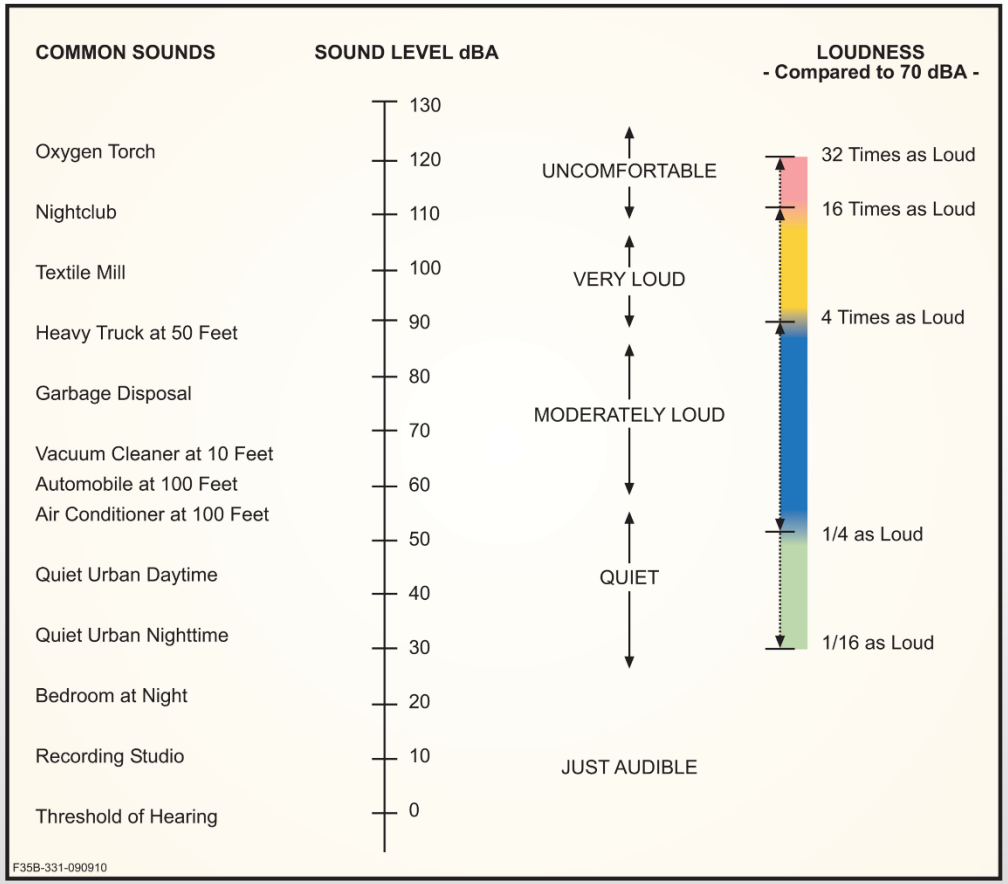
- **Lead Federal Agency:**
  - FAA

- **Cooperating Agencies:**
  - National Aeronautics and Space Administration
  - Department of the Air Force
  - U.S. Coast Guard
  - U.S. Fish and Wildlife Service Merritt Island National Wildlife Refuge
  - National Park Service Canaveral National Seashore

Noise - Basics

- Perception and evaluation of sound involves three basic physical characteristics:
  - **Duration** – Length of time the sound can be detected
  - **Magnitude** – Acoustic energy, which is expressed in terms of sound pressure, in decibels (dB)
  - **Frequency** – Number of cycles per second the air vibrates, in hertz

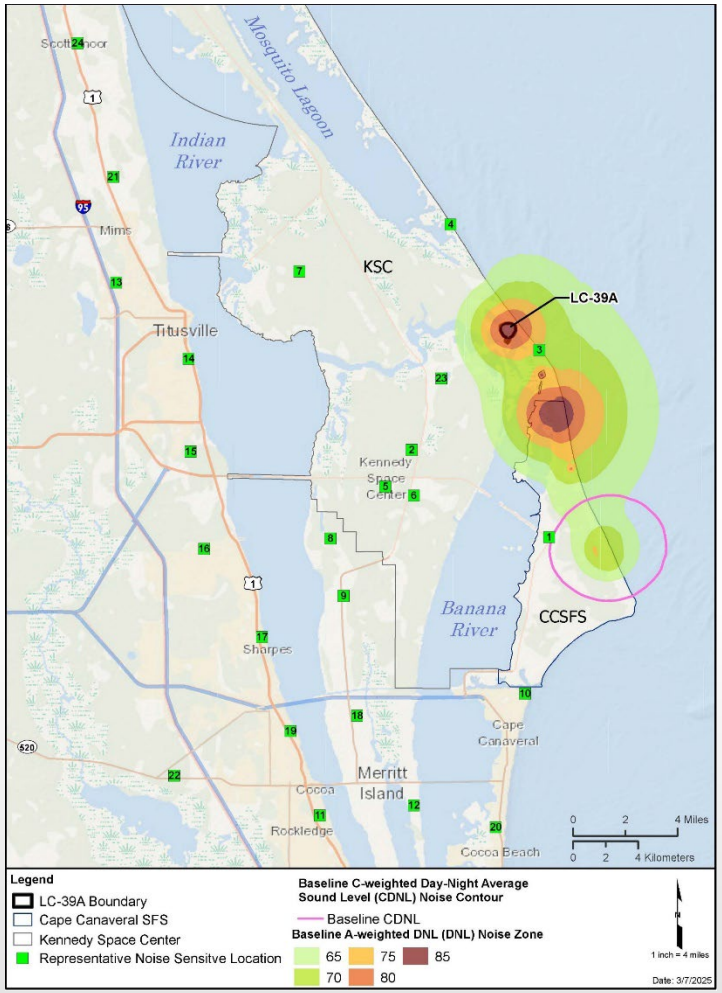
Typical A-Weighted Levels of Common Sounds



Noise - Overview

- Cumulative metrics (e.g., DNL and CDNL) reflect other ongoing (i.e., baseline) and expected future (i.e., no action and reasonably foreseeable) operations
- Effects are assessed against no action operational scenario levels
- Representative Noise Sensitive Locations selected for more detailed analysis
- Booster return trajectory variations levels presented in EIS (propulsion and boom)
- Weather impacts on noise levels acknowledged in EIS body and quantified for representative sets of atmospheric conditions in an Appendix
- Water deluge system noise minimization effects are not accounted for in the noise analysis (i.e., results in EIS are conservative)

Baseline C-weighted Day-Night Average Sound Level (CDNL) Noise Contour



Noise – Sleep Disturbance

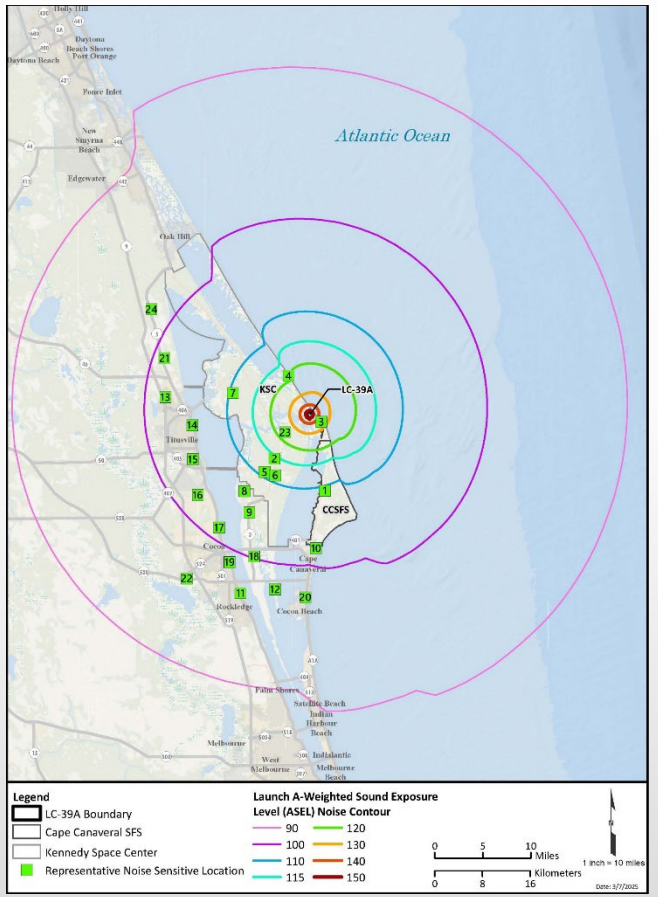
Propulsion Noise

- 22 'night' launches/year (10 p.m. – 7 a.m.)
- Up to 14% awakened if windows open and 10% if windows closed at off installation locations studied
- Higher % for people sleeping without structural noise reduction (e.g., camping)

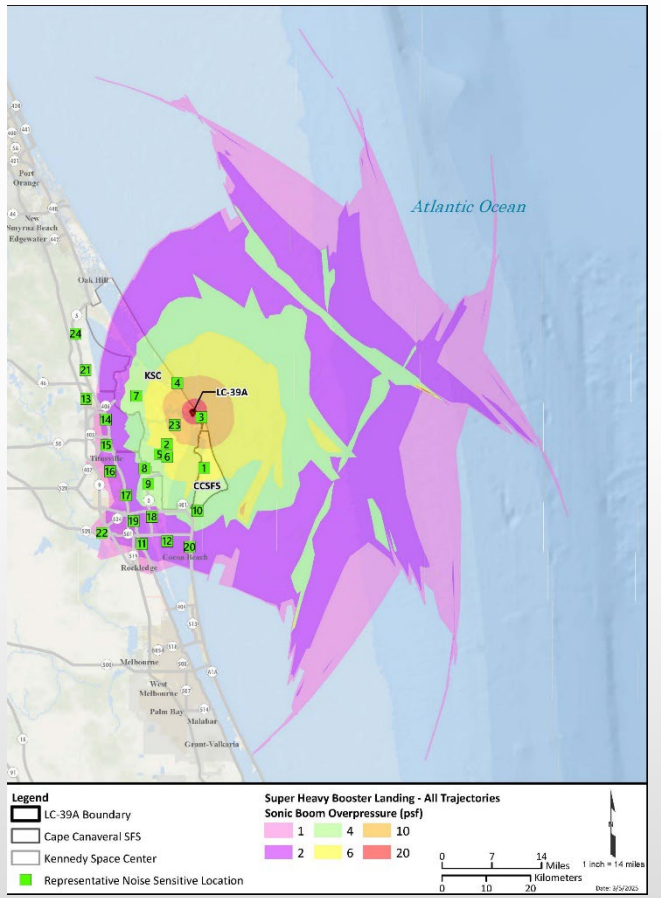
Sonic Booms

- 22 'night' booster landings/year (10 p.m. – 7 a.m.)
- Up to 82% awakened at off Center locations studied for booster landings / 56% for Starship landings – no structure attenuation
- For typical structures providing 15 dB reduction, lower % awakened (up to 42% for boosters / 22% for Starship)
- Sonic boom noise energy is primarily at low frequencies, which are attenuated only minimally by typical structures

Launch SEL



Booster landing PSF (3 trajectories)



Noise – Structural Damage

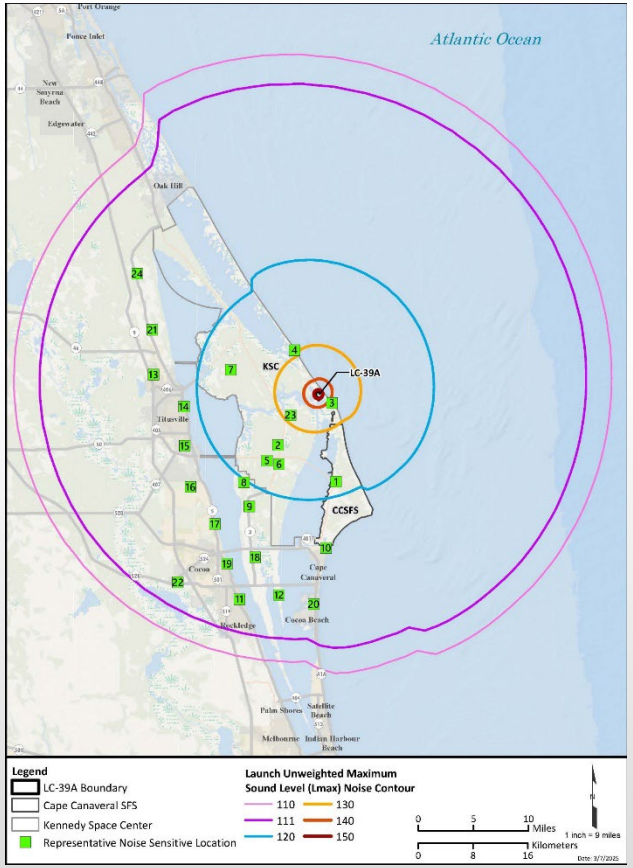
Propulsion Noise

- >111 dB Lmax (1/1,000 risk of damage claim) large area off-installation
- > 120 dB Lmax (1/100 risk of damage claim) very small off-installation area, multiple sensitive locations on KSC/CCSFS
- >130 dB Lmax (substantial risk) on-KSC within ~4 miles of LC-39A

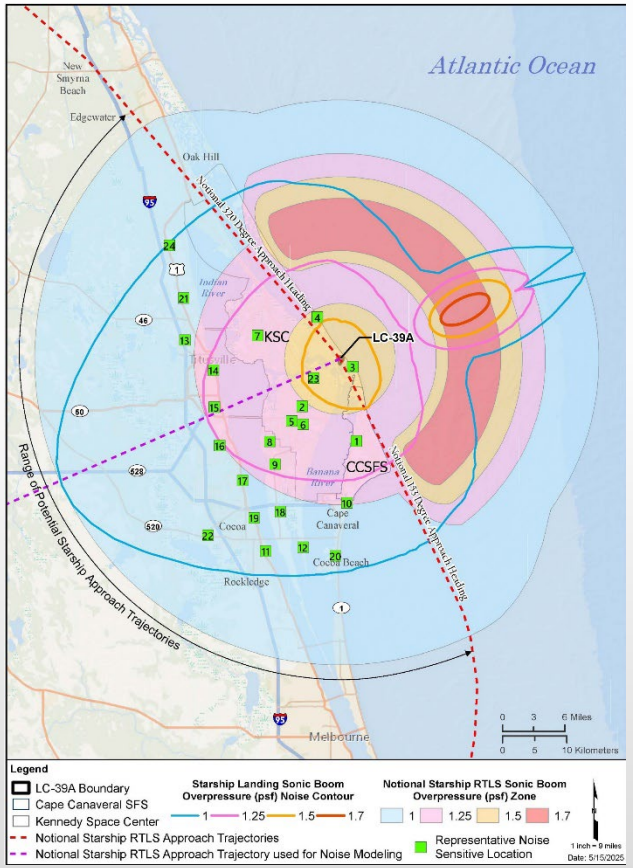
Sonic Booms

- >2 psf (1/10,000 risk for large window breakage) in off-installation areas for booster landings
- >4 psf (1/10,000 risk for small window breakage) in portions of Merritt Island
- >10 psf within ~5miles of LC-39A (on KSC/CCSFS)
- <2 psf for Starship landings all locations

Launch Unweighted Maximum Sound Level (Lmax) Noise Contour



Starship Landing) Sonic Boom Overpressure (psf Noise Contour



Noise – Hearing Loss Risk

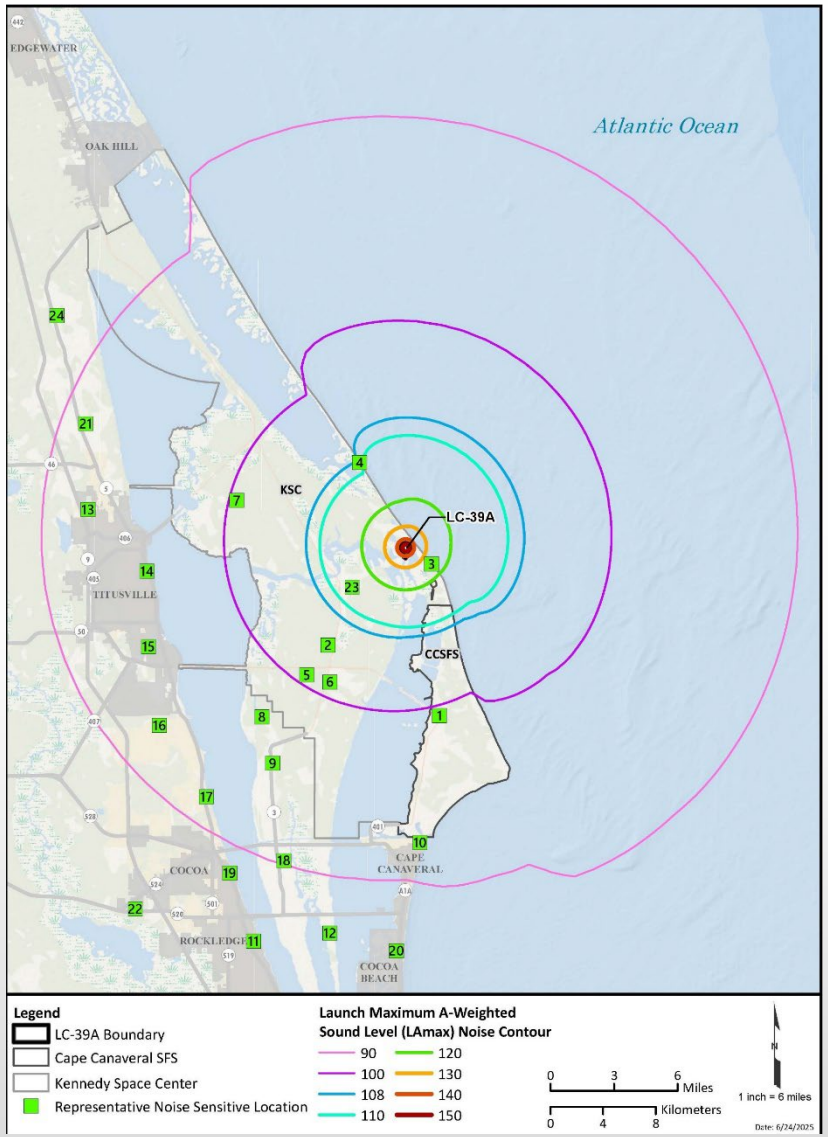
Propulsion Noise

- KSC criteria levels (108 dB LAmax for ~2 minutes) exceeded only on KSC/CCSFS and offshore areas
- Protective measures under hearing conservation programs on KSC and CCSFS manage hearing loss risk

Sonic Booms

- Boom overpressures would exceed 4 psf (approximately equivalent to 140 dB impulsive noise criteria) in portions of Merritt Island (i.e., outside KSC/CCSFS)
- Up to 4.8 psf at off-installation locations studied
- Sonic boom sound energy primarily very low frequency and does not interact strongly with human hearing mechanism
- Workplace criteria are designed to be protective for daily exposure for 40-year career whereas proposed action exposure would be less frequent
- Protective measures under hearing conservation programs on KSC and CCSFS manage hearing loss risk

Launch Maximum A-Weighted Sound Level (Lamax) Noise Contour



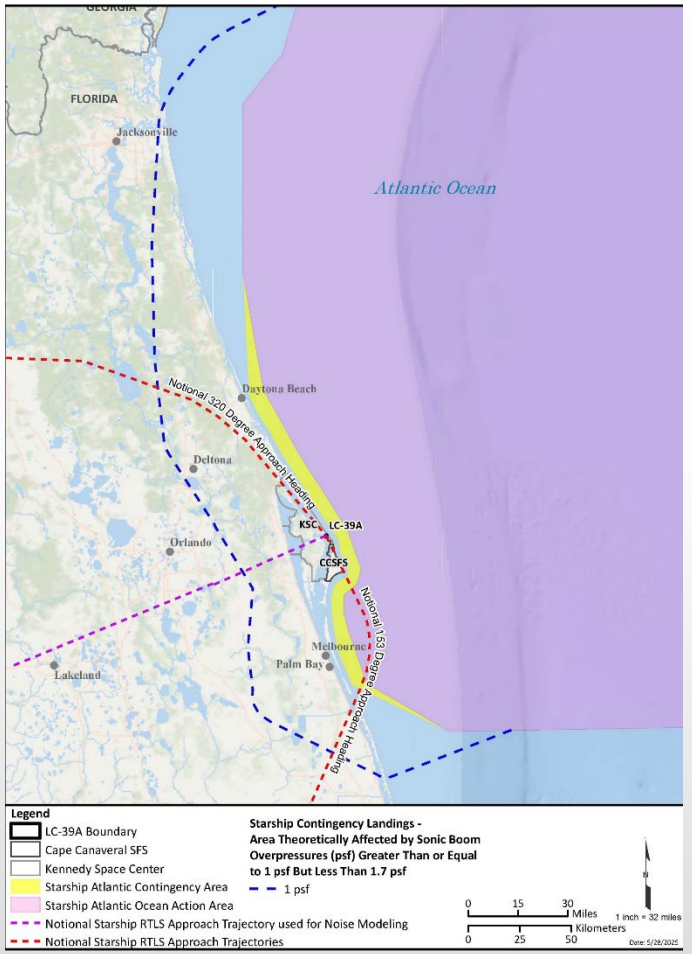
Noise – Contingency Landing Scenario

Propulsion Noise

- Super Heavy Booster contingency landing area: minimum 5 miles offshore
- Super Heavy Booster contingency landing noise levels generally less than nominal landing levels on land
- Starship contingency landing area: minimum 1 mile offshore and extends more than 1,000 miles into ocean

Sonic Booms

- Less than 5 contingency landings per year are expected
- Areas within the blue dashed line could experience a sonic boom between 1 and 1.7 psf, but extremely rare*



Land Areas Affected by 1 to 1.7 PSF

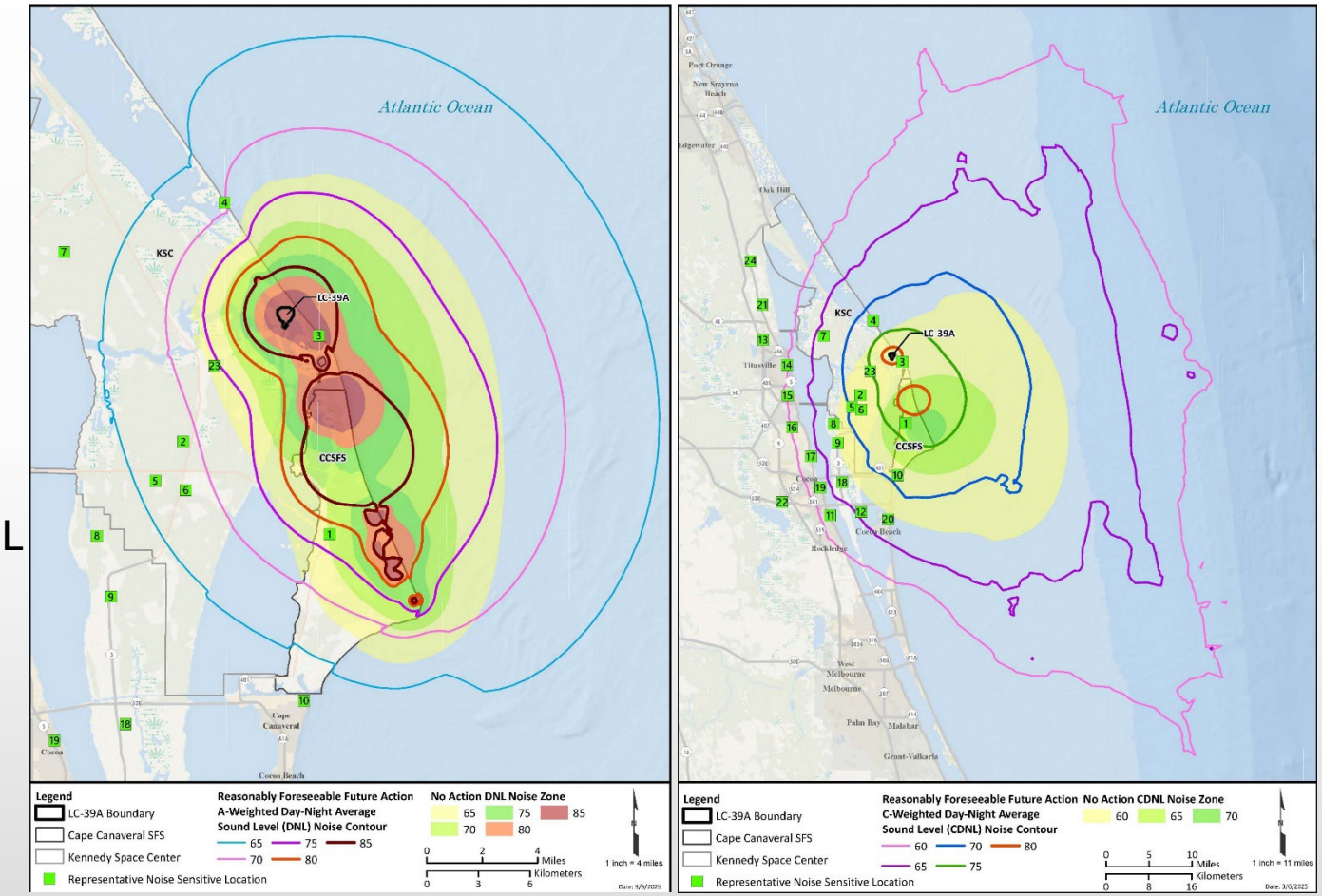
Noise – Annoyance and Land Use Compatibility

Propulsion Noise

- >65 dBA DNL stays within KSC/CCSFS under all operations

Sonic Booms

- >60 dB CDNL would affect 46,099 acres of land outside KSC/CCSFS and an estimated 120,941 residents under the reasonably foreseeable future actions scenario
- Noise sensitive land uses incompatible at 60 dB CDNL and above
- Increased % highly annoyed
- Exceeds significance criteria
- Late-night operations (10 p.m. – 7 a.m.) are a major factor in high CDNL values



Reasonably Foreseeable Actions DNL (left) and CDNL (right)

Land Use Impacts

Noise:

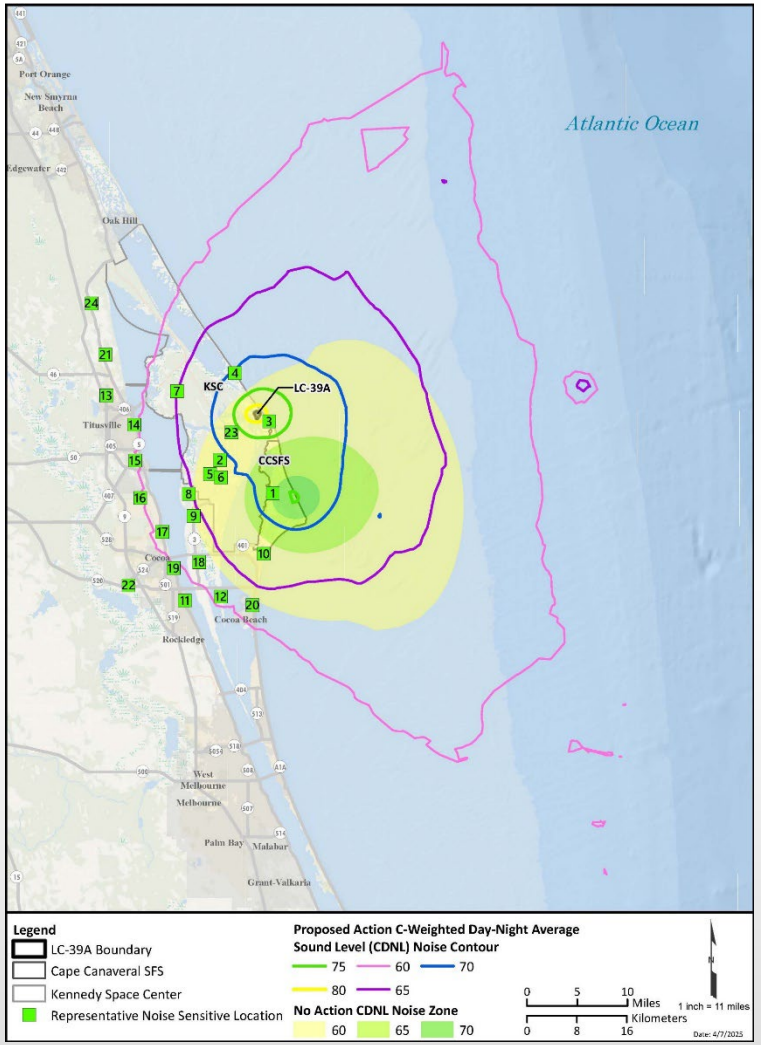
- Noise-compatible land use outside of KSC and CCSFS would remain compatible with guidelines published at 14 CFR Part 150, except for those areas exposed to sonic booms exceeding 60 dB CDNL.
- Sonic boom time-averaged noise levels would increase land area and population exposed to greater than 60 dB CDNL. Portions of Cape Canaveral and Merritt Island would be exposed to 65 – 70 dB CDNL.

Land Management:

- The Proposed Action would not change the existing use of the launch facilities or significantly change the fire management program activities in the area surrounding LC-39A.

Recreation:

- The relatively short duration of noise levels, and the fact that these are already subject to frequent launch-related noise, supports consideration of land uses in MINWR and CANA as being compatible
- Temporary closures or access restrictions of CANA (including Playalinda Beach) and MINWR would be necessary during launch and landing activities to ensure public safety and manage volume control



Department of Transportation Section 4(f) Impacts

Study Area

- Section 4(f) evaluation not required for MINWR or CANA – Section 4(f) evaluation focuses on properties outside these areas.
- For vibration impacts on historic properties, the study area is the extent of the 2 psf overpressure contour.
- For noise impacts on public parks, recreational areas, the study area is the extent of the 60 dB CDNL contour.
- For noise impacts on wildlife and waterfowl refuges, the study area is the extent of the 1 psf overpressure contour and the 60 dB CDNL contour.

Proposed Action

- Construction activities would not involve use of any Section 4(f) property. Construction activities would not result in substantive changes to the viewshed.
- Proximal properties are already exposed to launch/landing noise and access limitations on a regular basis. Operation would not result in constructive use of any Section 4(f) property.

Biological Resources Impacts

- Under the Proposed Action, the following stressors have the potential to affect biological resources:
  - Vegetation disturbance/destruction
  - Noise and visual stimuli
  - Vibrations
  - Sonic booms
  - Strikes/collisions
  - Deluge water and plumes
  - Artificial lighting
  - Hazardous materials
  - Invasive species introduction
  - Restricted access for management and monitoring

Historical, Architectural, Archaeological, and Cultural Resources Impacts

Study Area

- Area of Potential Effects (APE)
- The geographic area within which the Proposed Action may directly or indirectly cause alterations in the character or use of historic properties.
- The APE considers both construction and operation.

Proposed Action

- Increased vibratory effects from the Proposed Action have the potential to impact cultural resources.
- Sonic booms during launches and landings have the potential to cause structural damage.
- Setting and feeling of historic properties may be temporarily altered by the visual, audible, and vibratory effects of the proposed action.

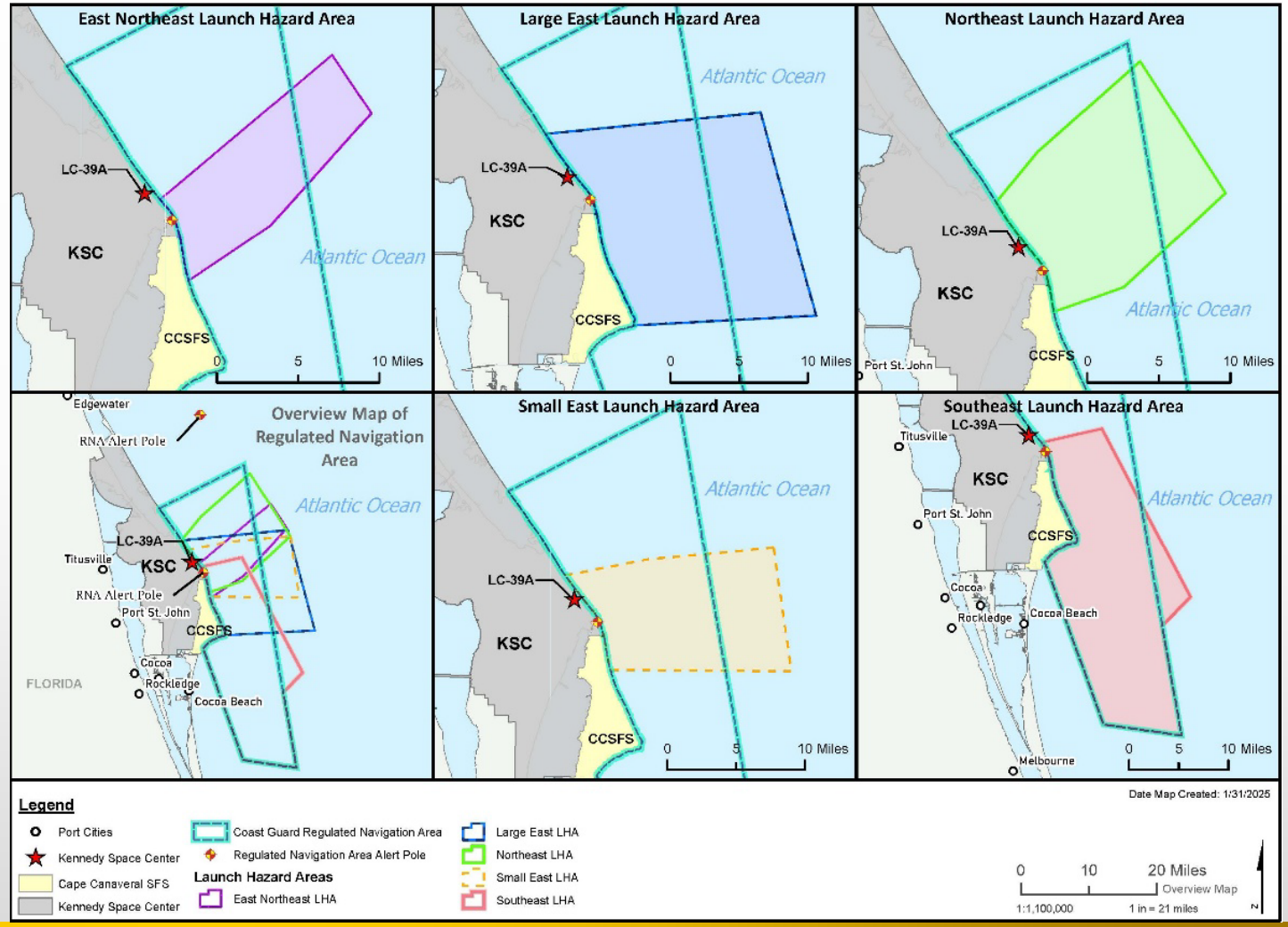
Maritime Transportation Impacts

Study Area

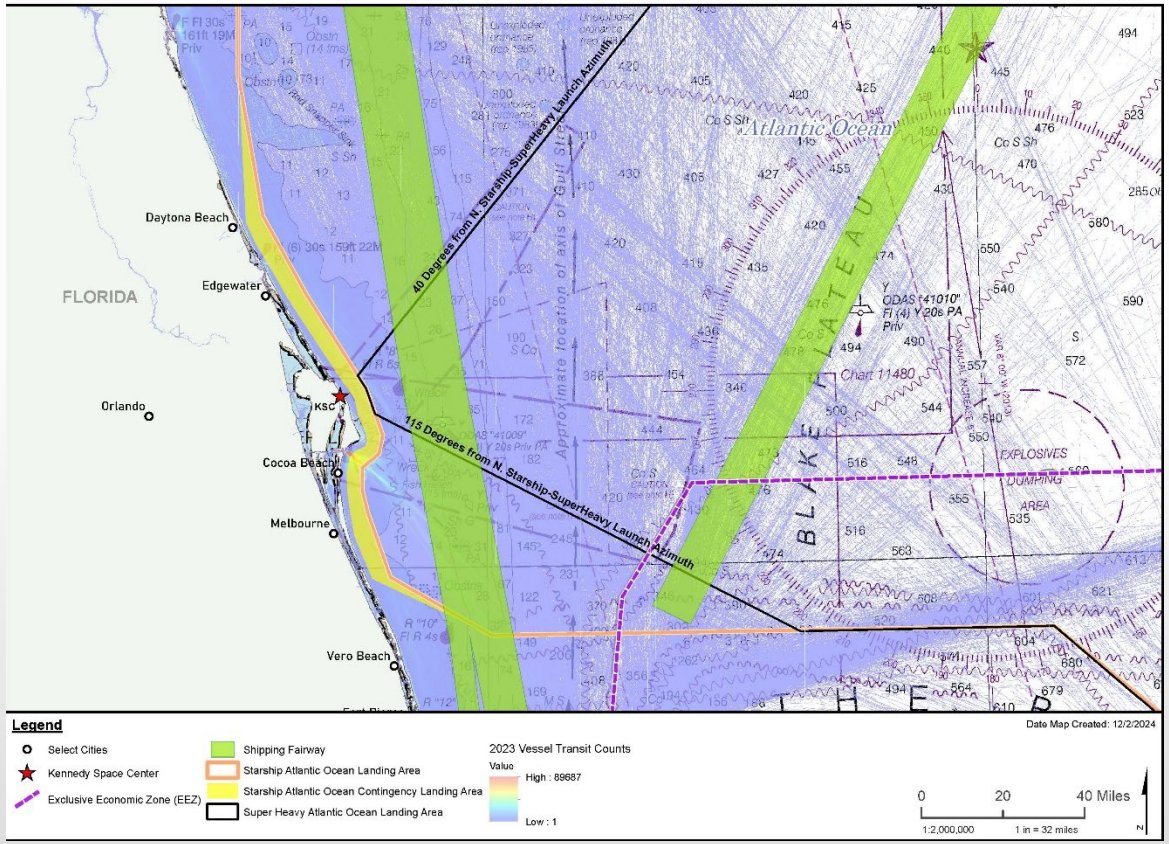
- LC-39A and the areas in and around KSC that could be affected by
  - Launches
  - Test operations
  - Transportation

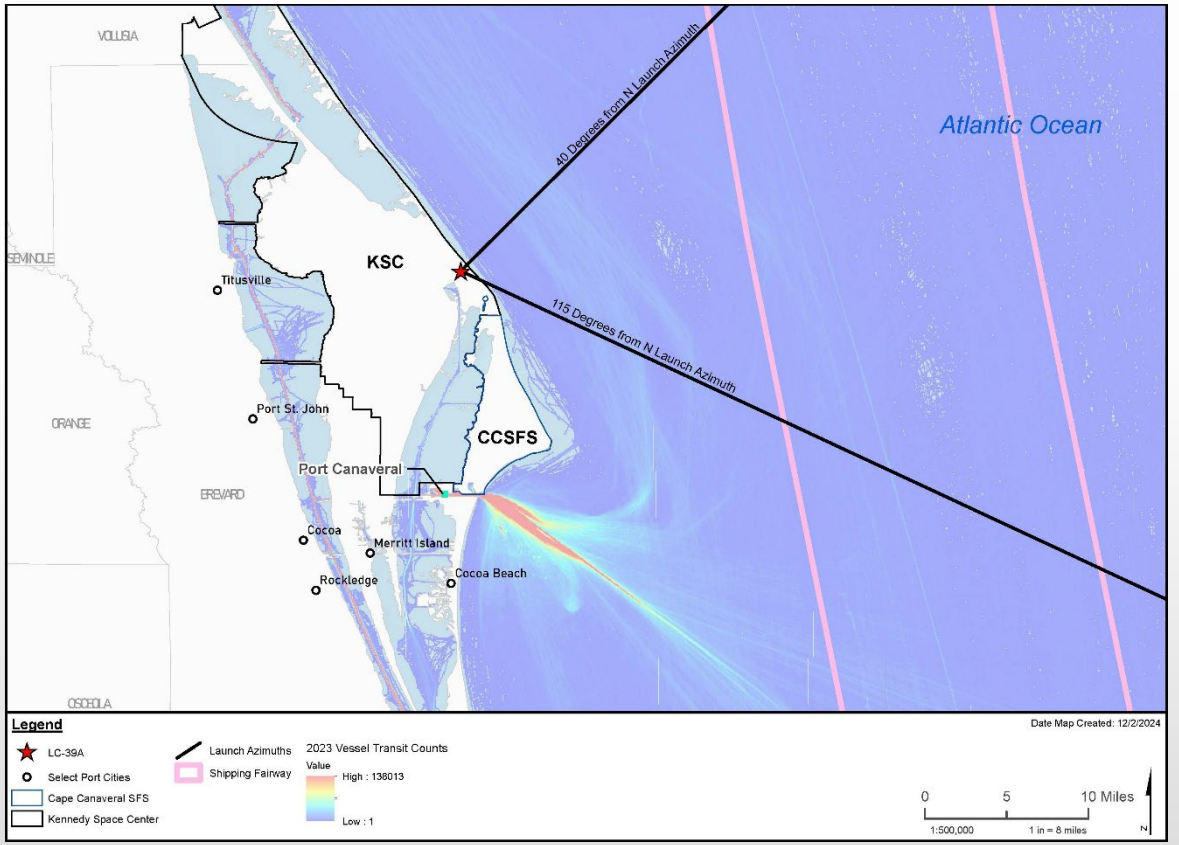
Proposed Action

- Static fire tests and launches/landings would require surveillance and clearing of certain maritime areas.
- There would be no changes to the sizes of RNAs that currently exist.



Maritime Transportation – Fairways and 2023 NOAA Vessel Traffic Counts

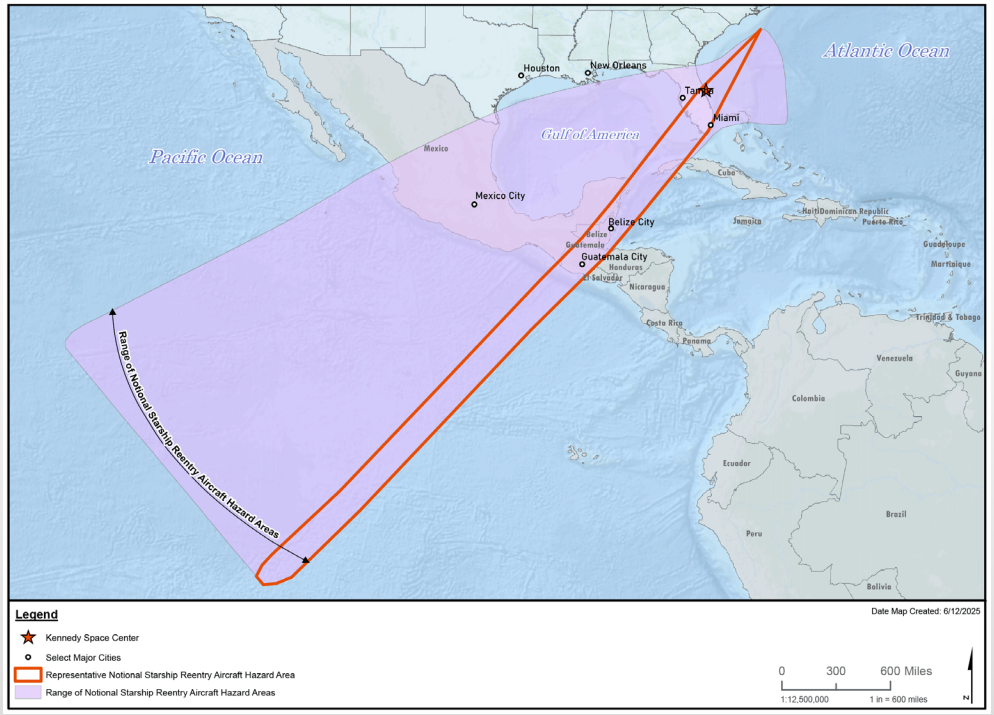




Airspace Impacts

Study Area

- Areas potentially affected by Aircraft Hazard Areas (AHAs) associated with launches and landings. Includes:
- Airways over the Atlantic Ocean, Caribbean Sea, and the airspace of the Bahamas
- Airways over portions of the Pacific Ocean, Gulf of America, and the airspace of several Central American countries



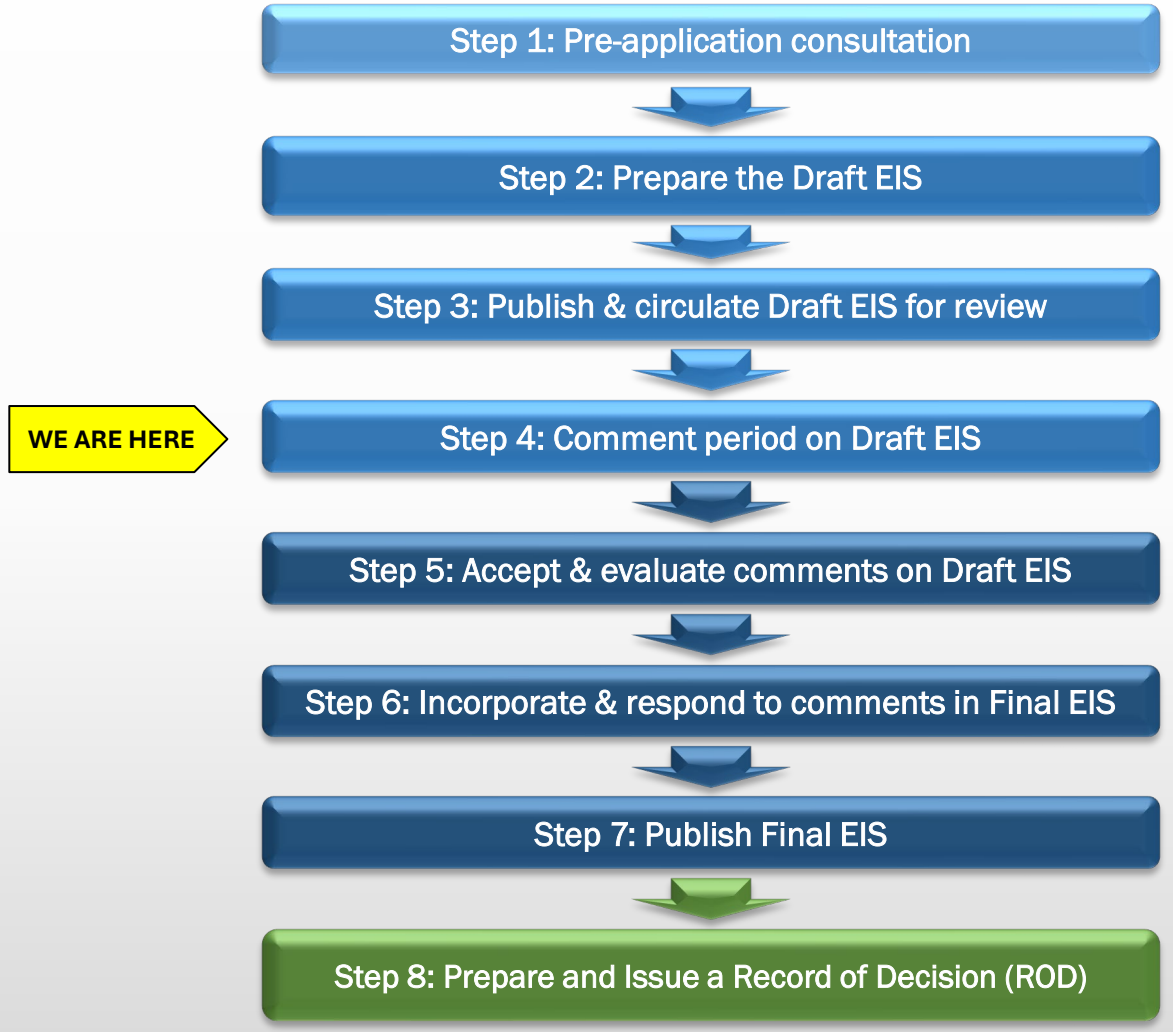
Airspace Impacts

Proposed Action

- Launch and Super Heavy booster returns may require temporary closure of airways over the Atlantic Ocean and affect the airspace of the Bahamas
- Starship reentry may require temporary closure of airways over portions of the Pacific Ocean, Gulf of America, Caribbean Sea, and Atlantic Ocean and affect the airspace of several Central American countries
- There may be significant aircraft rerouting to avoid Aircraft Hazard Areas (AHAs). Multiple airports may require ground stops due to overlying AHAs. Diversions and cancellations may also occur. The average expected flight delay could be:
  - Launches/booster landings – approximately 40 minutes to two hours
  - Starship reentries – approximately 40 minutes to one hour
- All launch and reentry operations would comply with necessary notification requirements, including issuance of Notices to Airmen (NOTAMs) and identification of AHAs that assist pilots in scheduling around temporary disruption of flight activities

Stakeholder Engagement Schedule

- **Draft EIS Preparation**
  - Coordination with agencies
- **Publication of Draft EIS**
  - August 8, 2025
- **Public Meetings on Draft EIS**
  - In-person meetings on August 26 & 28, 2025
  - Virtual meeting on September 3, 2025
- **Comment Period Closes**
  - September 22, 2025
- **Next Steps**
  - Incorporate comments on Draft EIS and publish Final EIS



Comments on the Draft EIS

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- Subscribe to the project mailing list and view the Draft EIS at: https://www.faa.gov/space/stakeholder_engagement/spacex_starship_ksc

Providing Public Comments

- Helpful Types of Comments
  - Accuracy of information
  - Adequacy of, methodology for, or assumptions used in the environmental analysis
  - New information relevant to the analysis or that would change the conclusions
  - New alternatives that meet the purpose and need statement, are feasible, and are substantially different than the alternatives already considered
  - Where clarification is needed

The public comment period ends on September 22, 2025.

August 26 & 28, 2025

Commercial Space Transportation

Public Meeting for the Environmental Impact Statement for the SpaceX Starship-Super Heavy Launch Vehicle at Launch Complex 39A at the Kennedy Space Center, Merritt Island, Florida

Federal Aviation Administration

Open House

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